



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/944,317	08/31/2001	Nikos Paragios	2000P07873US01	2148

7590 09/08/2004
Siemens Corporation
Intellectual Property Department
186 Wood Avenue South
Iselin, NJ 08830

EXAMINER

LAVIN, CHRISTOPHER L

ART UNIT PAPER NUMBER

2621

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/944,317

Applicant(s)

PARAGIOS ET AL.

Examiner

Christopher L Lavin

Art Unit

2621

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 3 – 5, 7, 8, 10 – 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abbott (5,999,634) in view of Higashikubo (5,999,635).

5. In regards to claims 1 and 8, Abbott discloses at column 7 in lines 1 – 10 a memory system for storing image history later in the same column in lines 41 – 44. Abbott discloses that memory pointers associated with areas that do not change are updated frequently. Thus the memory pointers with the largest counts make up the background reference. Abbot discloses in figure 1, and further discusses in the paragraph starting at column 1, line 17 a scaling technique for proper interpretation of the image. Geometric parameters must be used to create such a scaling system. In the paragraph starting at column 8, line 32 Abbot discloses an activity detection map. This Activity map is a change detection map, as change is represent by activity in the frame. Finally at column 3, line 7 Abbot discloses that the method documented can be used to measure congestion on a railway platform. Abbot's method has everything in common with claims 1 and 8, except it does not specifically state that geometric parameters are used with the change detection map to determine congestion in a given frame.
6. Higashikubo teaches in the paragraph starting at column 3, line 37 a congestion measuring method which takes into account geometric parameters (in this case the position of moving and congested vehicles) when computing congestion using the change detection map.
7. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use geometric parameters along with the change map to measure congestion (as taught by Higashikubo). Taking into account geometric parameters when measuring congestion would allow for a more accurate measurement

of crowdedness due to the perspective of a camera, thus areas close to the camera will not be over weighted in comparison to those areas far away from the camera.

8. In regards to claims 3 and 10, Abbott discloses in the paragraph starting at column 1, line 17 that the scaling is based on the perspective of the camera so, "that [the tiles] each cover substantially the same area regardless of the particular part of the image to which they respectively correspond".

9. In regards to claims 4 and 11, Abbot discloses at column 7, lines 1 – 10 that the memory, which is the background frame is continuously updated based on the change detection map. The change detection map in this case is the image interpretation for a frame.

10. In regards to claims 5 and 12, as previously shown in the response to claim 1, Abbot's method can be used for measuring the congestion of a railway platform, another term for railway is subway. Higashikubo discloses in the paragraph starting at column 3, line 37 taking the ratio of the congestion area to the overall area to determine the percent of congestion at a given time.

11. In regards to claims 7 and 14, Abbot discloses at column 7 in lines 41 – 44 that common scenes frequently update the pointers, which represent the background frame. Common scenes are made up of static pixels, thus static pixels of the background frame are updated.

12. Claims 2, 6, 9, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abbott in view of Higashikubo as applied to claim 1 above, and further in view of M. Ostendorf and H. Singer, "HMM topology design using maximum

likelihood successive state splitting," Computer Speech & Language, vol. 11, no 1, pp. 17 – 41, 1997.

13. In regards to claims 2 and 9, Abbot in view of Higashikubo has everything in common with claims 2 and 9 except for using Hidden Markov Model with successive state splitting.

14. Ostendorf in the first full paragraph on page 19 discloses the use of a Hidden Markov Model (HMM) with Successive State Splitting (SSS) which starts with a single node or state uses likelihood to determine confidence limits and where appropriate split the node into two, creating a new state.

15. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to use HMM with SSS as taught by Ostendorf to estimate the background frame. Markov models are among the best understood and best performing statistical tools for time-series inference, HMM are ideal for dealing with continuous data. Since there are several background situations in a typical subway platform that should be taken into account: no train on the tracks, moving train, or stationary train; using HMM with SSS to create a background reference frame would be highly advantageous.

16. In regards to claims 6 and 13 is covered in the rejection of claims 2 and 9. A new state is created for each split off node.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher L Lavin whose telephone number is 703-306-4220. The examiner can normally be reached on M - F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

CLL



LEO BOUDREAU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600